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ABSTRACT

This paper examines the changing demographics of American society and the impact of these changes on higher education. Discussions include a historical background of early American demography, the building and expansion of the population base, and census changes through various generations of the baby boom years and beyond. Next, the report examines efforts in forecasting older student enrollment which enable state and local forecasters to estimate enrollment numbers and institutional market share. Also discussed are the development and use of forecasting models, such as the Older Cohort Participation Matrices (OCPM), and the various data collection sources that are used by the U.S. Census Bureau. Tables of data show population projections from 1990-2080, U.S. population by selected age cohorts, older student population bases from 1921-1986, the older student market base/projected older population cohorts matrix from 1980-1998, and the older student enrollment forecasts/older student enrollment by cohort from 1980-1998. Finally, a review is made of the many factors that affect student population projections, both external and those stemming from the students and institutions themselves, followed by a discussion of the implications these factors will have on colleges and universities as they prepare themselves for this market and attempt to participate in it. Contains 14 references. (GLR)

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Higher Education and Adult Demography

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Higher Education and Adult Demography

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Increases in older students on campuses must be regarded as one of the more remarkable developments in higher education in recent years. The average age of students on the campuses of the colonial colleges, for example, was about 15. Average ages on many of today's campuses are nearly twice that. Upwards of forty percent (over five million) of all college students are now older students, i.e., 25 years of age and over, and last year they walked away from commencement exercises with 37 percent of the baccalaureates (Center for Education Statistics, 1987). Officials are predicting an increase in this figure for 1988 commencement exercises. And for future commencements. Older people like to go to college it seems and there will be no lack of older people to attend. Older people comprise the fastest growing population segment in America.

Who are these people? Why are they so numerous in America's population? Why are they on campuses in such great numbers? What forecasting mechanisms exist to divine their presence on campuses in the years to come? What might the future bring?

Older Faces, Many Places: Lifelong Learning in America

In a nutshell, older students are the lifelong learners that many savants said would come to the campuses as America evolved as a society of lifelong learners. They come to the campuses for the reasons these wise people said they would come: personal interests and professional advancement.

Older students defy demographic portraiture. American colleges and universities have never seen such a diverse group of people. They exhibit multitudes of faces and they take their higher education in increasingly diverse places. They also defy labels. As a result, they are referred to, variously, as older students, adult students, non-traditional students,

lifelong learners, and more. The federal government uses the term older students often and this term will be used in this paper. Marketing terms, e.g., "Returners," Upgraders," are also used.

Last semester this writer taught a class which included a budget director, a computer center official, a director of continuing education, an instructor in a hospital nursing school, a university relations director, two university student affairs officials, an assistant to an assistant vice president who handled university collective bargaining, a displaced homemaker, prepping - at 42 - for her first job, a woman who sold shoes in a shopping mall, and a woman who, at age 62, was taking the first course toward her Ph.D. degree. This individual's new statistics book was listed among the references for the course. Two deans of small liberal arts colleges, both with Ph.D. degrees, audited the course.

This group comprised a single course in college and university planning. While most were traditional students bucking for a Ph.D. in higher education, the last five were not traditional students in any sense of the term. They were excellent examples of the older graduate students: "Up-Graders," "Returners," "Personal Enrichers." Undergraduate students of this genre are even more interesting. These individuals comprise about 70 percent of older students on campuses.

Last semester, a thousand or so older students were enrolled in courses leading to the baccalaureate through the University's bachelor of general studies program. Some of these individuals live on the Older Student Floor of one of the University's more popular dorms. Most work, however, and attend school on a part-time basis. A large number of these students are former co-eds who left college early to marry. They are now returning to complete their degrees. Some bring little children to class. The nursery school of the School of Family Studies has a long waiting list for children of these students.

Ten miles from the University, at Manchester Community College, older students comprise a very large percent of the student population. The school enrolls a thousand

or so "Late Starters," thirty and forty year-old students who have decided to go to college. "Returners" are just as numerous. Many left school early. An increasing number have baccalaureates in liberal arts and come to MCC to enroll in career programs. Other "Returners" come from four-year colleges and universities and have decided for various reasons to spend more time at MCC. An associate degree in jet engine metallurgy is offered to plant workers - in the plant - of Pratt-Whitney Inc., the world's largest manufacturer of aircraft engines. Many of the instructors are Pratt-Whitney engineers. The average age of the sophomore class at Manchester is 30. Many students have attended MCC for five years and more, mixing work toward a degree with work toward family survival. They accumulate credits during recessions and place college attendance on the shelf to some extent during boom years. Mothers and daughters are common sights in the graduation processions of MCC.

Thirty-five miles from the University, the parking lots of the new campus of the Hartford Graduate Center overflow at 4:00 p.m. with students enrolled in master's programs in engineering, management and computer science. HGC is a creature of Pratt-Whitney Inc, Hamilton Standard, Northeast Utilities, and other corporations whose executives concluded some 25 years ago that the computer would change the way corporations made things and did business in the years to come. They decided that all of their engineering and management personnel must be retrained - and kept up to date - in the use of computers. They also decided that their resident computer science experts must be second to none. After careful study, they decided that they needed an entire college to get this job done, a college which was completely devoted to the challenge facing them. This was the beginning of one of America's more unique graduate schools. All of its 4000 or so students are older individuals. Most work for area corporations. Most have their tuitions and fees paid for by the corporations. All are working toward master's degrees in

engineering, management or computer science. Almost all classes are held during late afternoon and evening hours.

Fifty miles from the University, three engineers received master's degrees last spring. Their diplomas were awarded by the National Technological University of Fort Collins, Colorado, a free -standing graduate school specializing in master's degrees for corporate engineers. Instruction at NTU is bounced off a satellite and loaded down to televison sets, VCRs and computers at corporate sites. Discussion is held via television and computers. Tests are given in the same manner. Registration is by touch-tone telephone. Computers bill the company - in this case General Dynamic's Electric Boat Division - for tuition and fees.

A growing number of veterans entering the University bring credits from colleges operating on or near their bases. A growing number of Air Force veterans bring diplomas. These are beautiful creations: large pieces of parchment done up in red, white and blue, and bearing the seal of the Community College of the Air Force. Signs of the times: CCAF did not exist 15 years ago. Today it is America's largest college with 300,000 students and instruction toward associate in science degrees offered around the world. Computers load down credits via satellites to the CCAF registrar at Lackland Air Force Base in Texas. A primary mission of CCAF is to credential all of the Air Force's noncommissioned officers and as many of the enlisted men as possible. Courses offered by Air Force instructors are supplemented by courses offered by over 250 colleges and universities on or near Air Force bases. The Air Force spends $50 million annually in tuition and fees for such. CCAF graduates 10,000 individuals annually and enrolls over 5000 new students a month.

A growing number of transcripts submitted by students for admission to the University are from the American Council on Education. These transcripts report college credit earned by students in courses offered by corporations and filed with ACE, which serves

as the registrar for such courses. APONSI (A Program of Non-Collegiate Sponsored Instruction) is the acronym for this highly innovative operation. Some 400 corporations offer these courses as part of their staff training and improvement programs and upwards of 800 colleges and universities accept these courses for students entering or transferring to the institution. Both figures are growing.

Dog grooming, flower arranging and cake icing, long staples in the continuing education operations on many campuses, still occupy the energies of many adjunct faculty members offering short courses, seminars, workshops, dialogues, seances and more. Solid, practical offerings greatly outnumber such of course. And many people like dog grooming and want to learn more about it.

Non-credit work of this sort has been a mainstay of land grant colleges and universities for many years. Community colleges now offer similar courses. The School of Farriery of Colorado's Northeastern CC enrolls High Plains farriers and ranchers in farriery courses in Sterling, home of NCC, and elsewhere in the service region. Colorado Mountain CC enrolls 1200 fulltime students on campuses in Leadville and Glenwood Springs. CMCC also enrolls 12,000 part-time students, mostly adults, at 12 satellite campuses in its five-county service area on Colorado's Western Slope. Offices of the satellite campuses at Vail, Aspen and other resorts reflect the tastes of the upscale older students they serve: Ski chalets located near the lifts house the operations. Steaming cinnamon toddies laced with rum are served to registrants while they complete the paper work. Offices at campuses serving ranching families are more prosaic.

Finally in this vein, for $5000 or so one can book passage around the world on a cruise ship and earn 15 credits in the process. The cruise is three months long and is offered through the UCLA Division of Continuing Education. Classrooms aboard the ship are completely equipped with the very latest in educational technology and a faculty of five

accompanies each cruise. Shorter cruises to Europe and environs offer three and six hours of credit. Costs are also lower.

Adult Population

As noted above, the adult population is the fastest growing segment of all of the population groups. Population for any group is a function of fertility, mortality, immigration and emigration. Exogenous factors affect all of these variables and this interaction for a mature country has been in force for many years. It hastens or slows the building of population bases, compels individuals to form families, or forego such for extended periods of time, and it plays a key role in fertility and mortality. To understand what has gone before in this interaction is to understand the whys and wherefores of today's population.

Early American Demography

The first people from Europe and Africa joined the first Americans as permanent inhabitants in 1526 when some 200 slaves staged a revolt and ran away from the Lucas DeAllyon exploration party. This is the first record of permanent residence for newcomers to America. The DeAllyon party was Spanish. They came to America to search for gold. The revolt took place in the Pedee River Valley, around what is now the city of Georgetown, South Carolina. Spaniards came later (1565) to establish the settlement at St. Augustine, Florida. This was followed by English settlements at Roanoke Island, North Carolina (1585), Jamestown, Virginia (1607), and Plymouth, Massachusetts (1620). Two shiploads of English Catholics, sent by Cecilius Calvert, Second Lord Baltimore, established a colony at St. Mary's Maryland (1634). The newcomers joined two million people who had been in America for over 12,000 years (Brazziel, In Press).

Population in America grew slowly in the early years. Exogenous factors such as disease, hunger, exposure and war assured a high infant mortality for the newborn and a short life span for the adult. Immigration was slow to develop. Life in the new colonies was hard and many decided to forego the opportunity to make their fortunes in the new

/

land. At the beginning of the Revolutionary War, population of the colonies was less than four million. Indeed, the first census of the new country revealed a population of only 3.9 million. This in a land which had been open to settlement for nearly 300 years. The census was completed in 1790.

Building a Population Base

Building a population base is the most crucial challenge of a new country. If a population base can be established, fertility can be expected to expand it. Without a base, the country could falter as as a viable entity. Attracting immigrants is crucial in building population bases.

Immigration to America increased somewhat at the end of the Revolutionary War and a population base slowly began to build. The idea of a democratic republic appealed to many individuals and the sale of lands in the Northwest Territory attracted farmers from all over Europe. The Northwest Territory consisted of land between the Ohio and Mississippi Rivers, comprising what would become the states of Ohio, Michigan, Illinois, Wisconsin and Indiana. The land was won by Britain (from France) in the French and Indian War and ceded to America by Britain under terms of the Treaty of Paris. While England had been the origin of most immigrants to America in the early years, rich midwestern loam at $2 per acre drew hosts of farmers from Scandinavia and Germany.

The purchase of the Louisiana Territory in 1803 and the sale of these lands drew more immigrants. Most were farmers, however, and the masses of urban dwellers who would eventually swell the population base and lead to the "filling up" of America would have to await the coming of the Industrial Revolution and the huge factory complexes it would bring.

Samuel Slater, the father of America's Industrial Revolution, built Slater Mills in Pawtucket, Rhode Island in 1793. Factories sprang up in many towns in the next few decades and the trickle of immigrants to cities became a flood. The Industrial Revolution

had come to America and problems of a population base ceased to exist. This was a development of considerable import. Slater, a textile machinery engineer, memorized the workings of machinery in English mills and sailed for America in disguise. Emigration from England was illegal for textile factory engineers.

While the new factories of America drew immigrants in ever increasing numbers, exogenous factors in other countries greatly influenced the decisions of many to come to America. The potato famines of Ireland in the 1840s are cases in point. This resulted in the first of several huge waves of immigrants. Some 1.2 million Irish immigrants came to America during these years and the stream continued apace for many years. Today, eight times as many people of Irish descent live in American as live in Ireland itself.

Immigration from Italy, Poland, Russia and similar countries in Central and Southern Europe intensified in the early 1900s. Over eight million immigrants landed at Ellis Island from 1900 to 1914. Some Americans became concerned that the population base was becoming too large. Others were concerned that immigrants from Northern Europe, the origin of the first immigrants, were now outnumbered by immigrants from elsewhere on the continent. The Johnson-Reed Act of 1924 curbed immigration sharply and since that time fertility has been the determinant of population in America.

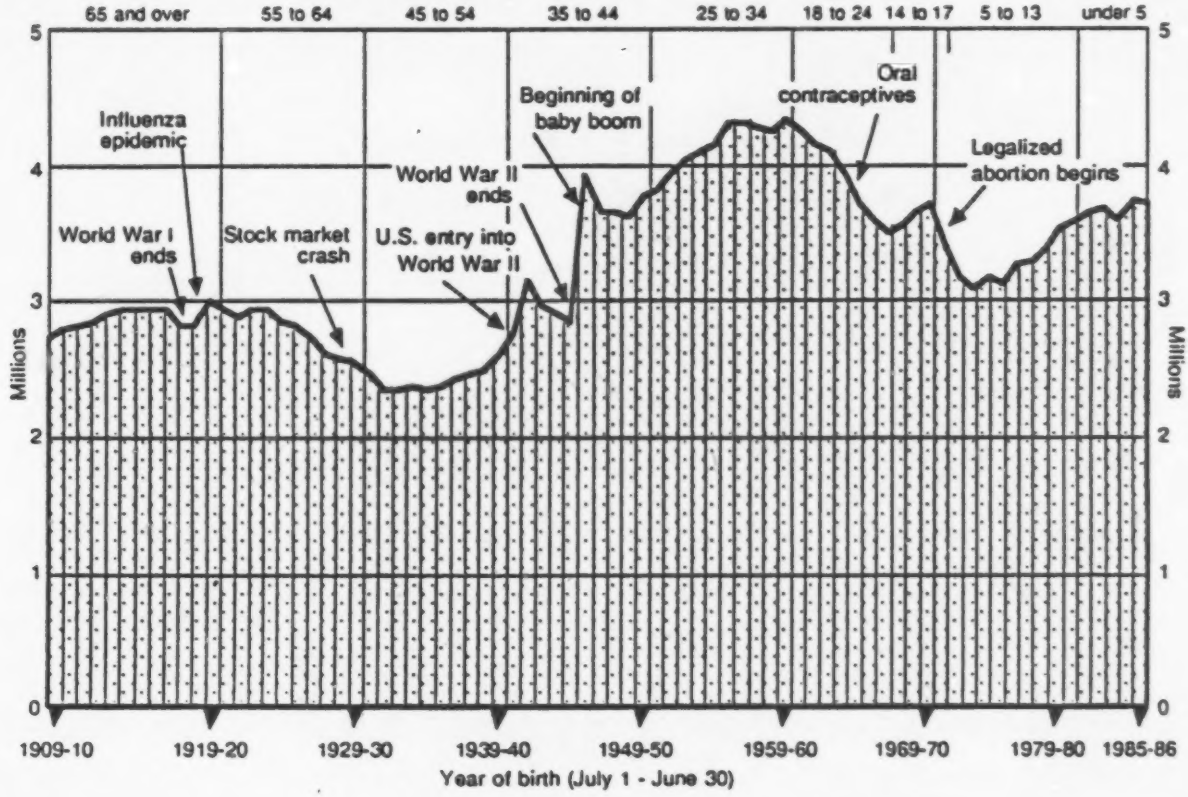
Birth and Fortune: Expansion From Population Bases

As noted above, population is a function of fertility, mortality, immigration and emigration. If immigration establishes a population base and is then controlled and if emigration is not severe, fertility becomes the key factor in population expansion. This has been the American experience. It can be seen in Fig. 1 that the influenza epidemic of 1920, the stock market crash of 1929, the approval of the sale of oral contraceptives and the legalization of abortions coincided with decreases in fertility while the end of World War II in 1945 and the beginnings of the echo-boom in 1976 coincided with sharp increases in fertility.

Far more than coincidence affected these developments of course. Like events in Early America, the scourge of an epidemic took many lives and resulted in low birth cohorts. The stock market crash and the Great Depression discouraged family formation and depressed cohort sizes for over a decade. The seven years of unrivaled economic growth following World War II encouraged family formation and large birth cohorts were the norm. In sum, prior exogenous factors determined cohort sizes of today, e.g., small cohorts of 1932-37 (Depression years) made for small 50-55 year-old cohorts in 1986.

Fig. 1

Exogenous Factors and 1986 Cohort Sizes



Source: U.S. Census Bureau, Estimates of Population of the United States by Age, Sex and Race , Series P-25 Population Surveys, 1987.

Richard Easterlin has analyzed these ups and downs of fertility and cohort size in the context of the impact of certain exogenous factors. He has written a remarkable book setting forth his theories. It is called Birth and Fortune (Easterlin, 1980). It propounds a central and useful theory: The Life Chance Theory.

According to the Life Chance Theory, perceptions of chances for a happy prosperous life (a good life chance) lead to family formation, high fertility rates and large birth cohorts. Perceptions of the opposite (a poor life chance) lead to limited family formation, low fertility rates and low birth cohorts.

Perceptions of life chances as good or poor according to this theory are determined by cohort size interacting with economic conditions. Perceptions of good life chances abound when small birth cohorts come of age. Because these cohorts are small, workers are scarce. Jobs are thus plentiful and wages are high as supply and demand laws impact the work place. As a result young people perceive life chances as good. They form families, fertility rates rise and large birth cohorts are the order of the day. The opposite obtains when these large cohorts come of age. Now there is an oversupply of workers, a hirers market and young people have difficulty in getting established and getting ahead. Perceptions of poor life chances abound and young people delay family formation, fertility rates fall and low birth cohorts are the order of the day.

The cycle repeats itself from one generation to the next according to the theory. The baby-boom generation is a case in point. So is the baby-bust generation. The former were progeny of parents from small birth cohorts who benefited as no other generation has from economic growth and opportunity. These low-cohort parents were born to Depression-era parents (perceptions of poor life chances) and were in great demand as adult work workers in the boom years after World War II. Worker demand was great and cohort sizes were small. Perceptions of life chances were good and the baby-boom itself was the result. The boomers, on the other hand, had, and are still having, difficulty in entering and

moving ahead in the work force. Results: delayed family formation, low fertility and small birth cohorts. This is especially true of individuals born during the last half of the baby-boom. Baby-Bust youngsters, on the other hand, now take their pick among the fast food jobs and marvel at the horror stories their parents tell about getting into college. Their mailboxes overflow with brochures from these institutions inviting them to enroll. Landon Jones has written a widely read book on these young people. It is entitled: Great Expectations: America and the Baby-Boom Generation (Jones, 1980).

Adult Population Today

In 1986 population 18 years of age and over was 179 million. Population 25 years of age and older, the market base of older students, was 152 million. (U.S. Census Bureau(5), 1987, p. 1).

The older population is growing. Baby-Boom children are now moving into the middle years and the echo-boom is just beginning. Figure 2 displays the progression of the former in graphic terms. Demographers use the concept of "pig in a python" to describe the progression of this remarkable bulge of cohorts through life. The baby-boom began in 1945 and ended in 1965. Nearly 80 million children were born during this period, over a third more than would normally be expected. The oldest boomer is now 42 and the average boomer is 32. At the height of the baby-boom, 4.3 million children were born in one year (1957), nearly twice as many as were born in 1937, near the middle of the Depression.

It can be noted from Fig. 2 that the cohorts of 35-44 are now the fastest growing among the lot and that they will comprise the largest cohorts for the next two decades. Again, the pig moves farther along in the python.

Cohort size dropped to 3.1 million children at the lowest point of the baby-bust years (1973). Cohort size has since climbed to 3.8 million but the increase is almost entirely due to fertility among the huge cohorts of the baby boom itself. Indeed, fertility is at its lowest point (1.8 children per family) since the Depression. If cohorts of four million each form

two million families, however, and if each family has two children, echo-boom cohorts can almost match those of the baby-boom. This seems to be happening to an extent (U.S. Census Bureau(4), 1987, p. 8).

Decennial census data indicated a total population of 241 million as of July 1, 1985, an increase of 6.4 percent from 1980. The median age of Americans was 31.8, up from 30.0 in 1980 and 27.9 in 1971. (U.S. Census Bureau(5), 1987, p. 1). This too relates to the aging of the baby-boom babies.

The 65-and-over population is growing rapidly due to advances in health care. As noted in Fig. 2, this group will grow enormously in the next 25 years when baby-boomers reach this age. By 2030, over 21 percent of all Americans will be 65 and over.

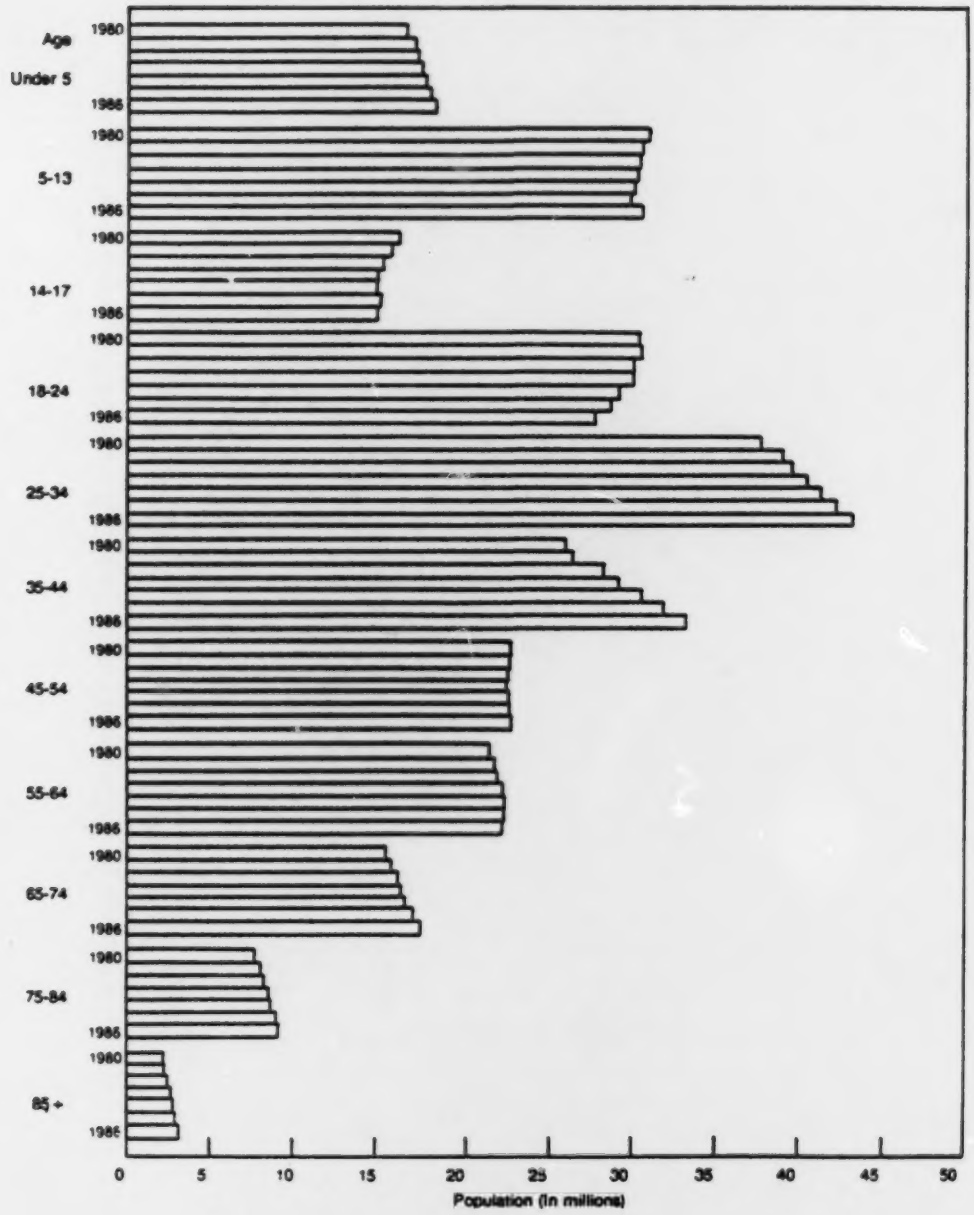
Fig. 2 indicates the troughs headed for the adult population years. The first comprises the 14-17 year-old cohorts born near the height of the baby-bust years. The second comprises the under-5 cohorts where the number of children for each year since 1980 has shown a small gain. In reality, the 5-13 year-old cohorts comprise a third trough. Nine cohorts were aggregated for the bar graph here as opposed to only four cohorts for the other two groups (under 5 and 14-17).

Whatever, there will be fewer young people and an abundance of older people in America in the years to come. This bodes well for older student enrollment on campuses.

For officials concerned with keeping the Social Security system solvent, however, the coming increase in older people is another story. As early as 1999, one Social Security recipient will be on the rolls for every three workers, up from one recipient for 13 workers when the system was established. Health care officials faced with huge demand for services for an aging population are also concerned.

Fig. 2

U.S. Birth Cohorts by Age Category and Year



Source: U.S. Census Bureau, Estimates of the Population of the United States by Age, Sex and Race , Series P-25 Population Surveys, 1987.

As can be seen from data in Table 1, the fastest growing segment of the population in the last five years were the cohorts of 35-44. On the other hand, cohorts under five years

of age showed a 10.9 percent increase, a sharp contrast to population for these cohorts in 1980. Baby-Boom babies' babies, together with a small number of boomers themselves, were having children. The latter consisted to a large extent of women who decided to forego child bearing for a number of reasons: late marriages, careers, and, no doubt, perceptions of poor life chances. Hospitals have set aside "Now or Never Wards" for these women. Age brings greater child bearing risks and these institutions want to be prepared. The youngest boomers are now 23 but many of the women on these wards are 35 and over.

Table 1

U.S. Population by Selected Age Cohorts

(000)

Age Cohorts	*1986*	*1980*	*% Change*
Cohorts Totals	*241,596*	*227,061*	*06.4*
Under 05 years	*18,128*	*16,348*	*10.9*
05 to 13 years	*30,346*	*31,159*	*-2.8*
14 to 17 years	*14,797*	*16,249*	*-8.9*
18 to 24 years	*27,973*	*30,289*	*-7.6*
25 to 34 years	*42,984*	*37,259*	*15.4*
35 to 44 years	*33,143*	*25,698*	*29.0*
45 to 54 years	*22,822*	*22,806*	*00.1*
55 to 64 years	*22,230*	*21,703*	*02.4*
65 to 74 years	*17,325*	*15,581*	*11.2*
75 to 84 years	*09,051*	*07.729*	*17.1*
85 years +	*02,796*	*02,240*	*24.8*

Source: U.S. Census Bureau, Estimates of Population of the United States by Age, Sex and Race , Series P-25 Population Surveys, 1987.

Between July 1, 1985 and July 1, 1986, 3.7 million children were born, net immigration (immigration minus emigration) was 613,000 and about two million people died. The population grew by one percent (2.3 million). Annual population growth of this magnitude has been the norm since 1980 and is expected to continue for the next decade or so (U.S. Census Bureau, 1987).

As the large baby-boom cohorts reach the mortality years , however, and the baby-bust cohorts reach the child bearing years in greater numbers, population declines will become the order of the day unless fertility rates among the baby-bust cohorts increase, immigration is moderate to heavy or breakthroughs in science enable people to live longer. As noted earlier, fertility rates in America are equal to 1.8 children per family. The population replacement rate for America is 2.1 children per family. Only 77 percent of each birth cohort reaches age 65 (U.S. Census Bureau(2), 1984, p. 43), hence the need for the added one-tenth of a child.

Data in Table 2 suggest that a population decline - or a population plateau - could be the order of the day. These data forecast a cresting of birth cohort size in 1990 when 3.8 million children will be born. Cohort size will then fluctuate: 3.4 million births in 2000, 3.6 in 2010 and 3.5 in 2030. It will decline to 3.4 million in 2080 and level off. Deaths will begin to approximate births in 2030 and exceed births in 2050. As shown in Table 2, moderate immigration rates (net = 450,000) will result in gradual population increases through 2080. Low immigration rates (net = 250,000) will result in population decreases. Thus immigration once more becomes a key factor in population in America. Recent net immigration has been healthy (600,000 annually) and this may preclude decline.

Many exogenous factors could intrude to cause forecasters to modify these projections. Fertility rates could increase and startling breakthroughs in the health sciences could enable more people to live longer. On the other hand, both fertility and immigration could fall if serious economic dislocations result in low perceptions of life chances. People may hesitate to have children in America and emigres may hesitate to come here. Only time will tell.

Table 2

Population Projections: 1990-2080

(000)

Year	Births	Deaths	Population*	Population**
1990	3826	2164	247968	249657
2000	3494	2363	263896	283238
2010	3673	2634	276642	296597
2030	3546	3434	292780	304807
2050	3517	3957	292052	308488
2080	3434	3878	285692	310762

Source: U.S. Census Bureau, Projections of Population of the United States , Series P-25 Population Surveys, 1984.
**Estimates based on low net migration rates*
*** Estimates based on medium immigration rates*

Whatever, the population base is in place. Expansion of the base will obtain for a time and, most important for people interested in the education of older students, the market for such for the next 50 years or so is already here. The 35 year-old housewife who will return to college to complete her baccalaureate next fall was born in 1953. Her daughter who was born in 1973 might come to the campus at the same age and for the same reason in 2008. The housewife's last child, who may be delivered today, may come in 2023.

Attempts to understand and forecast older student enrollment have been futile until recently. Unlike younger students, no historical data on which to base forecasts existed. This has changed, however, and models for such forecasting are beginning to appear.

Forecasting Older Student Enrollment

OCPM is one of the first models for forecasting older student enrollment and the very first model which enables state and local forecasters to estimate enrollment and institutional market share (Brazziel, 1987).

OCPM (an acronym for Older Cohort Participation Matrices) utilizes the historical data on participation rates of older students in college as compiled by the U.S. Census Bureau in their Series P-20 population surveys. The Bureau has collected this data for over a decade now and participation rates have been sufficiently consistent to allow for forecasts.

The Bureau collects these data by interviewing a stratified random sample of approximately 60,000 American families (U.S. Census Bureau(1), 1984). Annual interviews have now become the rule. The Bureau also works closely with the Center for Education Statistics of the U.S. Department of Education. This unit collects data from colleges and universities directly through its Higher Education General Information Survey (HEGIS). Recently, data on older students have been requested. Recently, too, HEGIS has been expanded to include students enrolled in vocational schools and will be renamed IPEDS (Integrated Postsecondary Education Data System).

Both data collection systems are good although the effort to make final headcounts jibe can be interesting. The standard error in random sampling coupled with the human error of college and university reporting systems will preclude an exact match, of course. P-20 Surveys also exclude certain individuals. The thrust of the effort is to minimize the distance between totals. For OCPM and forecasting models which will surely follow, the P-20 data are essential. Participation rates are disaggregated according to age group and stochastic forecasts are thus possible. HEGIS cannot provide such dissagregation. The new system (IPEDS) will not provide such either.

Series P-20 surveys have a small standard error. The standard error for the various participation rates is 0.3 percent with a confidence level of .95. This can be considered excellent. The surveys are limited to households. They exclude overseas military personnel taking courses. Military personnel stationed at U.S. bases and taking courses are undercounted. Again, the survey selects households for the sample. Only military personnel liv-

ing in off-base housing would be eligible for inclusion in the sample. Final participation rates are rounded upward to account for these individuals. HEGIS data accounts for all military personnel directly through counts made by institutions. Series P-20 surveys also exclude foreign students. These students are included in HEGIS data.

OCPM begins with a population base which includes birth cohort data for all individuals likely to take a credit course at a college or university over a time frame. This can be comprehensive. Two years ago, a 92 year-old Nebraska man won a Ph.D. His dissertation had to do with the wagon train his grandfather joined to get to the state. Older student participation in higher education drops sharply after 55, however, and a population base which comprises 60 cohorts would encompass most of the individuals who would be around for and interested in participation as a college student.

Table 3 is a population base which comprises 66 cohorts (1921-1986). Much of the earlier discussion of population variation due to exogenous factors can be traced graphically through perusal of these data, e.g., the cresting of the baby-boom in 1957 with a 4.3 million birth cohort, the depressed cohort rates of the Depression. A summary of these factors follows:

- *Influenza epidemic, 1920: small birth cohorts*
- *Depression, 1930-42: small birth cohorts*
- *Depth of Depression, 1937: smallest birth cohort*
- *End of World War II, 1945: large birth cohorts, baby-boom*
- *Crest of baby-boom, 1957: largest birth cohort*
- *Oral contraceptive approval, 1964: small birth cohorts*
- *Legalization of abortion in several states, 1972: very small cohorts*
- *Roe v. Wade, 1973: nadir of baby-bust, smallest birth cohort*
- *Echo-Boom begins, 1974: larger birth cohorts*

Table 3

Older Student Population Base
U.S. Birth Cohorts: 1921 - 1986

(000)

Year	Births	Year	Births	Year	Births	Year	Births
1921	3055	1938	2287	1955	4104	1972	3256
1922	2882	1939	2266	1956	4218	1973	3136
1923	2910	1940	2360	1957	4307	1974	3159
1924	2929	1941	2513	1958	4250	1975	3144
1925	2909	1942	2809	1959	4298	1976	3167
1926	2839	1943	2935	1960	4258	1977	3326
1927	2802	1944	2795	1961	4268	1978	3333
1928	2674	1945	2735	1962	4167	1979	3473
1929	2582	1946	3289	1963	4098	1980	3598
1930	2618	1947	3700	1964	4027	1981	3646
1931	2506	1948	3535	1965	3760	1982	3680
1932	2440	1949	3586	1966	3606	1983	3639
1933	2307	1950	3554	1967	3521	1984	3697
1934	2396	1951	3751	1968	3502	1985	3710
1935	2377	1952	3847	1969	3571	1986	3713
1936	2155	1953	3965	1970	3718	0000	0000
1937	2145	1954	4078	1971	3559	0000	0000

Source: U.S. Public Health Service, Vital Statistics of the U.S. , Annual Reports, 1921-86.

A population base does not a forecast make, of course. The next step in modeling is to create a market base. This is done by aggregating cohorts by age to comprise a total of prospective adult participants in higher education in any given year. Age 25 is used as a base year in this exercise. Table 4 is a market base comprising 65 cohorts (1921-85) aggregated by age groups by year. This is a tedious but necessary exercise. It is also instructive. For example, one can trace the progression of the King Cohort of the baby-boom (1957: 4.3 million births) into the beginning of the older student years (age 25) where, in concert with smaller cohorts, it combined for a total market base of 145 million prospects for 1984. Combining with larger cohorts of the baby-boom years, the King Cohort

yields a market base of 155 million for 1988. The cohort was only 23 years old in 1980 and is not represented in the market base. It will be 37 in 1994 and 41 in 1998. It is included in the 35+ category for the market bases of these years.

From Table 4 it can be seen that the market base for 1988 comprises 155 million older people. This increases to 168 million for 1994 and and 172 million for 1998. As noted earlier, older people like to go to college and there will be plenty of older people around.

Table 4

Older Student Market Base
Projected Older Population Cohorts Matrix: 1980-1998

(000)

Age	1980	1984	1988	1994	1998
25	4104	4298	4098	3571	3136
26	4078	4250	4167	3502	3256
27	3965	4370	4268	3521	3559
28	3847	4218	4258	3606	3718
29	3751	4104	4298	3760	3571
30	3554	4078	4250	4027	3502
31	3560	3965	4370	4098	3521
32	3535	3848	4218	4167	3606
33	3700	3751	4104	4266	3760
34	3289	3554	4076	4256	4027
*	97290	105070	113470	127080	137120
Totals	134673	145506	155577	168850	172776

** Data for 55 cohorts 35 years of age and over*

Based on U.S. birth cohorts 25.....ith years earlier.
Does not include students studying under temporary visas
Age 35+ cohorts adjusted for mortality.

A market base, too, does not a forecast make. Theoretically, all of the individuals in the base could show up at the registrar's window. Only a small proportion will of course.

To the market base, then, one adds the participation ratio and multiples through for the number of participants for a given year. Data for this exercise are found in Table 5.

Data in Table 5 were developed by multiplying participation rates as shown in the table headings by the appropriate numbers in the market bases in Table 4. For example, 10 percent of the market base of four million 25 year-olds in 1988 yields an estimated enrollment of 400,600 25 year-olds for 1988. Multiplying through for the 26 year-olds yields an estimated enrollment of 416,700 26 year-olds for 1988. After all years have been multiplied through, the totals for 1988 are aggregated for a total of 4.2 million as an estimated enrollment of older students for 1988. The complete OCPM model (Brazziel, 1987) includes formulas for forecasting state and service area enrollment. It also includes a formula for forecasting institutional market share.

It can be noted that participation rates for the model are based on 1984 Series P-20 Population Surveys. Thus, these data comprise a low, conservative estimate of older student enrollment in the years to come. Error is surely apt to be on the low end, i.e., underestimation rather than over-estimation. OCPM validation exercises utilizing older student enrollment data from Connecticut yielded a precision index of .95.

It can also be noted from Table 5, for example, that the forecasts exclude foreign students. As noted above P-20 surveys exclude foreign students. Totals can be expanded by 400,000 or so to allow for these students, most of whom are older students studying in American graduate schools. Also discussed above is the fact that military personnel enrolled in classes offered by American colleges and universities overseas are excluded. Center for Education Statistics analysts adjust total older student enrollment upwards to account for both foreign students and overseas military students. These data come from annual reports from the institutions (Center for Education Statistics, 1985). Finally in this vein, it can be noted from Table 5 that a constant participation rate is assumed for the years 1988-1998. An increase in participation rates could result in increases in enroll-

ment. A decrease in rates would result in decreases in enrollment. Participation rates thus become central in older student enrollment in the years ahead.

This year, 1988, is the peak year for older student enrollment according to these forecasts. Large numbers of the baby-boom babies will be past the years of heavy participation in higher education and children from the baby-bust years will begin to take their place. It can be noted from Table 3, for example, that the cohorts with four million births all appeared between 1954 and 1964. Thus, as seen in Table 4, ten of these cohorts will be 25-34 years of age in 1988. As noted, these are the ages of heavy participation in college for older students. It can be noted, too, from Table 4 that only one cohort of four million can be found in the listings for 1998 and that only five can be found in 1994. Further, that the nadir of cohorts for the baby-bust makes its appearance in the listings in 1998. This is the 25 year-old cohort with 3.1 million people who were born in 1973.

Thus, while Table 4 totals indicate an ever larger market base of older prospects for the next decade, Table 5 indicates an ever smaller enrollment forecast. The older prospects will be with us but they will no longer be in the high participation years. Time may be needed to absorb this dynamic and an equation of sorts may help:

- *Many large cohorts in high participation years = Large enrollments*
- *Many small cohorts in high participation years = Small enrollments*

Variations of this theme may be developed once the basics become familiar, e.g. large cohorts in low participation years, small cohorts in low participation years.

Exogenous factors may intrude to preclude a decline , of course, and these factors will be discussed in the final pages of this paper.

Table 5

Older Student Enrollment Forecasts
Older Student Enrollment by Cohort: 1980-1998

Participation Rates: 25-29 = 10%; 30-34 = 6%; 35+ = .82%	1980	1984	1988	1994	1998
25	410,400	429,800	409,800	357,100	313,600
26	407,800	425,000	416,700	350,200	325,600
27	396,500	430,700	426,800	352,100	355,900
28	384,500	421,800	425,800	360,600	371,800
29	375,100	410,400	429,800	376,000	357,100
30	213,240	244,680	255,000	241,620	210,120
31	213,600	237,900	258,420	245,880	211,260
32	212,100	230,820	253,080	250,020	216,360
33	222,000	225,060	246,240	256,480	225,800
34	197,340	212,240	244,630	255,480	241,620
*	797,780	861,574	930,454	1,042,056	1,125,368
Totals	3,830,560	4,129,974	4,296,724	4,087,536	3,954,328

* Data for 55 cohorts 35 years of age and older

Data source for participation rates: U.S. Census Bureau, School Enrollment: Social and Economic Characteristics of Population , Series P-20 Population Surveys, 1984.
Data source for cohort size: National Center for Health Statistics, Vital Statistics of the United States , Annual Reports for 1921-86.
Data based on birth cohorts 25.....ith years earlier.
Students studying under temporary visas not included.
Excludes students in enrolled in non-credit courses.
Excludes overseas military personnel enrolled in courses.
Assumes a constant participation rate for 1988-1998

Again, exogenous factors can intrude to alter these projections. Endogenous factors may also intrude. Exogenous factors comprise changes which impact from the outside, e.g., economic changes, technology changes and the like. Endogenous factors comprise changes from within, e.g, changes in mission of the institution and changes in the composition or prevailing ethos of the students.

Precluding Factors

It is well to begin with endogenous and exogenous factors which might preclude increases in older student enrollment and which, indeed, may cause a decrease in enrollment. Discussion of enabling endogenous and exogenous factors can then proceed with these possible deterrents in mind.

As noted above, population will affect all segments of the older student market. As baby-bust babies occupy the high participation years in the market base, the base will be much smaller. This trough in births lasted about ten years and, beginning in 1989, the market base for older students will be affected by this trough.

An endogenous factor which is seldom discussed, but often thought about, is a change in the prevailing ethos regarding lifelong learning. Said differently, college for older students might simply go out of style. Things like this happen. Other ways of learning might come onto the scene. The Learning Connection, a corporation operating classes in large cities, is an example of this sort of thing. Or people simply might lose interest. It happens. If such comes to pass, that proportion of older students attending classes for the sheer joy of learning would be the first to go. The 62 year-old entrant to the Ph.D. program is a case in point. So is the shoe salesperson.

Women comprise over two-thirds of all undergraduate enrollment among older students. Undergraduates, in turn, comprise over 70 percent of older student enrollment. As noted, many of these women are "Returners," i.e., students who left college early for home and family and who are returning for baccalaureates. Women are no longer leaving college in large numbers for these reasons - or any reason. Baccalaureate completion for women is now comparable to baccalaureate completion for men (U.S. Census Bureau(5), 1987). The "Returner" segment of the older student market base will certainly be affected in the years to come by this development.

Life chances for the Baby-Bust workers may become so attractive that striving for an edge through further study and more degrees and certifications may no longer be necessary. A segment of the older student population could indeed be labeled "Strivers." They may disappear to some extent and the "Striver" segment of the older student market base might disappear along with them.

Enabling Factors

The ever upward progression of an educated adult population and workforce and the reduction in high paying jobs requiring little advanced education might be the single most powerful factor in maintenance of and increases in older student enrollment. American education is a huge success story. Over 80 percent of the individuals in the older student market base (individuals 25 years of age and over) have a high school diploma. Over 40 percent have been to college and over 20 percent hold a college degree (U.S. Census Bureau(5), 1987, pp. 1-10.) Something of a "tipping point" can obtain in situations like this. Ten years ago, for example, the number of working wives began an upward progression. So did family income. Today an ever increasing number of wives work - many out of necessity to keep pace with rises in family income generated, in large part, by working wives. The median family income in 1986 was over $26,000 and 57 percent of the wives worked. Median income for families with working wives was over $34,000. (U.S. Census Bureau(5), 1987, p. 5). As more older people go college, more older people may have to go to college. Like the situation for many working wives, a choice in the matter may increasingly disappear.

Colleges and universities themselves will be mighty forces in maintaining older student enrollment as they increasingly reach out to these individuals to compensate for baby-bust enrollment deficits. Schools, here-to-fore completely disinterested in this sort of thing have developed thriving older student operations. They have also discovered marketing and dropped their inhibitions about using it. Some of these operations may be folded, of

course, when the echo-boom cohorts come on line in 1996 and younger students become more plentiful. Meanwhile, many operations will expand. While older students have kept headcount stable on campuses, many of these students only enroll for a course or two a year and FTE continues to slide. More older students, taking more courses, will be the order of the day on many campuses.

Both the corporate and the military operations described above (CCAF, APONSI et al) will expand the market base for older students by offering more courses and programs. The old adage which holds that "the more education people get the more education people want," will play a role here. Many of these students will enroll in baccalaureate programs on college campuses.

A million new teachers will be needed in the years to come to serve echo-boom children and to replace large numbers of retirees. Recertified teachers who left the field - or who never taught - will fill many of these jobs. Most of these individuals will enroll in certificate renewal classes. The ranks of the older students will swell as a result. Nursing is a similar case in point. Severe shortages already obtain and aging baby-boomers will result in even greater demand for health care - and shortages of nurses to offer it. Nurses who left the profession are now being recruited - and retooled - to fill the vacant slots.

Implications for Colleges and Universities

All in all, enabling factors will probably cancel out precluding factors and older student enrollment will be healthy for the foreseeable future. Forecasters must always look on the other hand, of course, and keep a weather eye out for the unforeseen and the unthought of. Good planners begin each year with an analysis of the social, economic and political environment and make projections for three or five years. They update the plan annually, rolling it forward one year. If threats loom on the horizon, the update and roll-forward modifies the plan accordingly. The days of making a plan and following it blindly for a

specified time are over. The new Rolling Plans will enable officials to keep abreast of any changes in the older student scene and to do so in a matter-of-fact, business-as-usual way.

Some colleges and universities don't plan, of course, and others plan poorly. The message here is clear: change your ways. This advice should be heeded by institutions most threatened by dwindling numbers of younger students. Small liberal arts colleges in the Northeast are cases in point. In New England, for example, high school seniors in public schools will decline 40-43 percent by 1996. Nationally, the decline will approximate 25 percent. Variation abounds. In Utah, for example, religious beliefs regarding family size make for ever increasing senior classes.

Most small liberal arts colleges are more tuition dependent that most and a decline of 50 FTE students at these schools can be a cause for alarm. Operating budgets are affected. Shortfalls crop up in dormitory operations and so on. Continued decline can result in closure of the school.

The regional state college or university along with more than a few community colleges are also threatened. A game of musical chairs can be in progress in some states, with flagship state universities taking students who ordinarily would have gone to regional state colleges and universities and the latter, in turn, taking students who ordinarily would have gone to community colleges. State institutions with declining enrollments don't seem to face the possibility of closure. However, faculty, staff and scope of operations may be reduced and mergers with other state units as branches and other academic outposts are distinct possibilities.

Institutions which are not threatened by truncated numbers of younger students are flagship state universities, highly selective private universities and highly selective private colleges.

Some individuals have pointed to the steady enrollment of the last few years and opined that predictions of enrollment decline have not been accurate. Two things about this view:

First, decline is indeed with us. While enrollment headcount has remained relatively steady, FTE has declined significantly. Second, the worst part of the decline is yet to come. We have yet to get through the six percent drop in births in a single year plus continued annual declines of one and two percent thereafter. As can be noted from Table 3, this decline began in 1971 and was accelerated in 1972 and 1973 by court decisions legalizing abortion. These seriously truncated cohorts will begin to arrive on campus next year and will continue for the next several years.

Planning for older students can range from a casual space-available arrangement for a few older students at Yale to the intense planning which characterizes New College of New York where everyone seems to be an older student.

A middle ground scenario might be that of Crystal Lake, a mythical liberal arts college we use for exercises like this. A third of the enrollment at Crystal Lake comprises older students and the trustees would like to keep the number of older students at the college at this level. They bring in a significant amount of revenue and are essential to budget balances as the traditional freshman classes continue to shrink. More older students would change tne nature of Crystal Lake more than some alumni would like it to be changed, however, and Crystal Lake planners keep this fact in mind as they develop the annual updates and roll-forwards of Crystal Lake's Rolling Plan.

Crystal Lake's Planning Committee evaluates its older student operations at the end of each year and feeds the results of the evaluations into the Rolling Plan for the next year. This evaluation cycle is used for all operations and disaggregations of evaluation efforts are common for relatively new initiatives, e.g., minority students, affirmative action, new program majors.

Crystal lake planners make an environmental scan using a five-year scope to identify threats to viability and to identify windows of opportunity. The planners have data on predicted sizes of graduating classes of all high schools in their service area for the next

five years and trend data indicating the percent of each class that enrolls at Crystal Lake. Tracking such data gives them a fine estimate of the size of freshman classes they can expect to enroll in the next five years and alerts them to high schools sending fewer students to the college than has previously been the case. Added resources are directed toward students, parents, faculty, counselors and alumni of these schools.

Using historical data on older student enrollment, Crystal Lake planners identify the communities of their older students and the organizations to which they belong. The latter become part of the recruiting network for older students. They also identify key newspapers, magazines, newsletters and other media outlets for this group. After many years of older student participation, Crystal Lake's older student enrollment is largely self-generating. Media advertising is therefore minimal. Image marketing is the order of the day. Thus, news of upcoming concerts, lectures, athletic events, faculty triumphs and the like along with occasional sage pronouncements by the president constitute the media focus of Crystal Lakes's external relations staff. Advertising is limited to handsome layouts of summer computer camps for children; SummerScene, Crystal Lake's modest summer school; repertory theatre offerings, and lecture series.

Using OCPM or other older student forecasting models, Crystal Lake planners study forecasts of older enrollment for the next five years. Using the state forecasting feature of the OCPM model, the planners make projections of older student enrollment for the state for the next five years. Using the service area feature of OCPM, they are able to project potential enrollment for the Crystal Lake service area and to track the historical percent of their market share. They are also able to develop objectives for increasing or decreasing this share.

Crystal Lake planners have data on birth cohort size for 1987 and Census Bureau estimates of cohort size for 1988. They are thus able to generate adult cohort sizes for 2013-2043, the years of heavy to moderate higher education participation for these and

similar cohorts. This information serves as context, however. The actual Rolling Plans comprise five years with a roll-forward each year.

Crystal Lake's data analysts noted that while headcount for Crystal Lake's older students comprised a third of the headcount, of the college, their FTE comprised less than 10 percent of total FTE. They noted that over half of the older students were part-time students and that they signed up for about 1.5 courses a semester. They decided to mount initiatives designed to increase the number of courses taken by older students. This will increase FTE among these individuals and help more in the struggle to balance the books.

The president serves as chairperson of Crystal Lake's planning committee and he was visibly shaken when analysts reported that a decline in older students seemed in the offing. He wondered aloud if this was an accurate forecast, noting that it seemed statistically impossible what with all of the magazine articles and telecasts talking about America having more older people than ever before and about a severe shortage of rooms in infarction wards, pacemakers stocks at an all-time high, a looming shortage of cemetery plots and more. After regaining his composure, he was able to grasp the meaning of the charts and graphs the analyst presented. As the pig moved through the python, i.e., as the baby boom babies moved through the high participation years of older cohorts (age 25-35), they were being replaced by smaller cohorts from the baby-bust years. The analyst also reported that data from high schools in the service area forecast an upturn in high school graduates in 1996. The echo boom babies would be coming to Crystal Lake. Not to worry.

The president/chairperson appointed a committee broadly representative of faculty and students to study the question of Crystal Lake's response to this demography. Would the upturn in high school graduates be sufficient to make up for the downturn in older students? Some soothsayers were postulating a steady-state for older student enrollment and pointing at increased participation rates to back up their arguments. Was there truth in

these contentions? Crystal Lake might be able to do without older students, but did Crystal Lake want to do this? The parking problem would be ameliorated, but should Crystal Lake turn away from older students and go back to the homogenized campus? Has the Crystal Lake experience been enriched by older student participation? Does the rhetoric about lifelong learning imply a moral responsibility to guarantee access for older students? Have efforts to have older students at Crystal Lake regarded as students as opposed to "non-traditional students" been successful? Non-traditional students can be left out of things. Further, non-traditional students are often considered expendable, people to be used to help balance the budget, to be exploited in a sense, at least in some people's minds. Where is Crystal Lake in all of this? What will Crystal Lake do? What will it do?

A decline in older student enrollment at Crystal Lake would constitute a far more difficult situation than a decline at UCLA where, as described above, multitudes of courses are offered to multitudes of older students each year and 25 percent of these courses are changed each year. Changing tastes and changing clientele are operational modes at UCLA and little concern will be expressed about a downturn in older students. Older student operations are concentrated for the most part in the Division of Extended Education. This division is self supporting. Indeed, it amortized its own high rise office building some years ago and expects to have a mortgage burning soon. Further, participation rates of older older students are higher in this operation. There are the study-tours described above, gourmet cooking classes and more, all aimed at this market segment. Young adults have neither the time nor the money to embark on a study tour to Europe. If these young adults are in short supply for courses offered the Upgraders and Retrainers, the division will simply offer more "products" for older older students who will be in good supply. Life will go on. The focus will return to young adults when echo-boom cohorts begin to come on line as older students. Also, unlike Crystal Lake, almost all of the faculty of the division have adjunct status and faculty strength can be adjusted up or down with

ease. A faculty appointment is far from the million dollar decision it constitutes at Crystal Lake.

Community colleges may already be feeling the effects of a downturn in older students. As noted earlier, these schools enroll larger proportions of older students than most. In recent years, their both their headcounts and their FTEs have begun to decline. Some of this decline may be attributable to the economy. As noted above, enrollment of older students rise with recessions and decline with recoveries. As noted, too, some of the decline may have to do with "admissions musical chairs," i.e., regional state colleges and universities taking erstwhile community college students to make up for losses of erstwhile regional state college and university students to flagship state universities. Like the UCLA operations, however, community colleges use many adjunct faculty members and enrollment declines among older students can be absorbed with relative ease. Like UCLA, too, the Colorado Mountain Colleges among us can easily develop new "products" for older older students. Further, these schools are mining the lodes of corporate education better than most and the prospects of expansion in these markets are enormous.

Again, we can reasonably assume that older students will be very much a part of the higher education enterprise in the years to come. Demographics will cause fluctuations in their enrollments. As noted above, and in other papers in this seminar, demographics cause fluctuations in all enrollments. Planners make adjustments. The bottom line is that the older student will be there in the years to come. Colleges and universities will adjust accordingly.

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